

## Cycles of Learning: ARS and Tomorrow's Scientists

*You're a college sophomore who has just decided to take a job as a part-time research assistant at a nearby plant genetics research laboratory. It seems like a good opportunity, and the research—genes and pollen—piques your interest.*

*The lab turns out to be a great place to work. There's much to learn, and you're surrounded by people who enjoy what they do. Even better, your supervisor, a top researcher in the field, wants to nurture your interest in science....*

*....Seven years and one doctorate later, you return to the lab. But this time, you're the one who's training and mentoring novice undergraduates. As you introduce them to the world of laboratory research, you're determined that their experience will be as valuable as your first job there.*

This is a true account in the still-unfolding career of a young scientist working today at the Plant Gene Expression Center in Albany, California. It's one example of a cycle of learning that can continue for decades, starting more new cycles as seasoned researchers share knowledge and a zeal for science with newcomers eager to learn.

These learning cycles are formed, renewed, and strengthened every workday at ARS laboratories throughout the country. The cycles foster newly emerging talents and generate new discoveries. They educate, enable, and empower.

ARS labs attract new talent not only because of the research topics and the expertise of the agency's scientists, but also because the labs are up-to-date facilities with the equipment necessary for leading-edge research. Seminars and visitors provide continuous learning as well as an opportunity to forge new collaborations with other labs in the United States and abroad.

The scientist referred to in the example above returned to Albany to re-join a Plant Gene Expression Center team whose work is described in an article beginning on page 8 of this issue. Because it is jointly managed by ARS and the University of California, many who receive mentoring at this center are university students. But there are others as well, ranging from local high-schoolers to postdoctoral fellows from universities and private or government research institutions around the globe. At present, trainees at the Albany center include 30 undergraduates, 10 graduate students, and 30 postdoctoral fellows.

The time and effort that ARS scientists devote to mentoring often stems from a strong desire to help aspiring scientists succeed. Doesn't every Ph.D. scientist remember the

undergraduate years, when the path to a doctorate sometimes may have seemed long and daunting? Established scientists who share their skills, energy, and empathy with those who are not yet as expert find that these mentorships can be among the most rewarding aspects of their professional lives.

In return, ARS benefits not only from the work that the learners do, but also from what is sometimes a new and wonderfully naive point of view. Newcomers see the research from a fresh perspective. In response, veteran researchers reexamine and reevaluate their research approaches and—sometimes—even revise them.

In the Albany lab, students are treated as full-fledged members of the group from the moment they walk through the door and put on their lab coats. For example, they attend lab meetings right from the start. At first, they may understand very little of what's discussed. But by year's end they will usually be familiar with almost every technique that's being used.

The Plant Gene Expression Center has been fortunate to receive funding through the ARS Postdoctoral Research Associate Program, an agencywide, \$5 million competition in which associate positions are funded for 2 years at \$50,000 a year. This program attracts hundreds of research proposals from ARS scientists throughout the country who want to employ new postdocs in their labs. In the fall, ARS will announce which laboratories have received the funding. Later, the new hires will take their places next to their ARS mentors at the laboratory benches. As they tackle some of the toughest problems in agricultural research today, new cycles of learning will begin.

### **Sarah C. Hake**

Director

USDA-ARS & University of California, Berkeley

Plant Gene Expression Center

Albany, California